New Analysis Machine
Wage Levels

Survey From the Air
Stock to the Royal

Within Our Borders

AN ALBERTA GOVERNMENT PUBLICATION

OCTOBER 15

Test Tube Sleuthing

Provincial Analyst Probes Myriad Materials

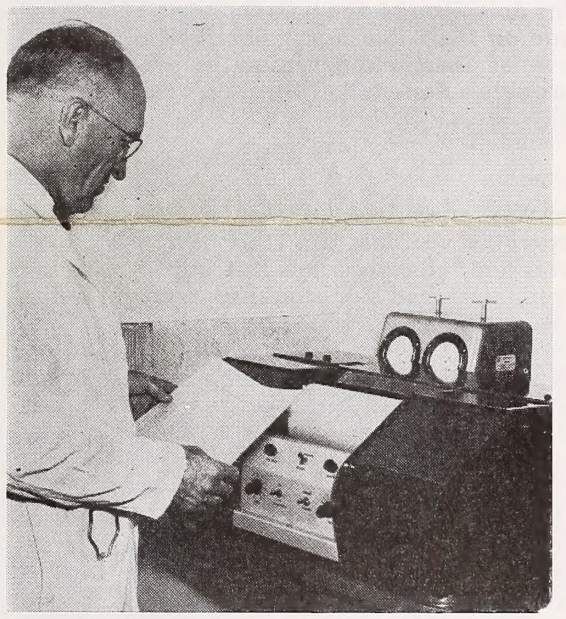
INDIRECTLY helping to guard the health, safety and prosperity of Albertans is a little-publicized but oft-used service — the Provincial Analyst and Industrial Laboratory. The importance of this branch's activities can be best appreciated when it is realized here is where all water samples in the province are tested for purity and drinking fitness, rocks and ore for metal content, alcoholic beverages for purity and concentration and various building materials such as steel, concrete and glass for composite strength.

Currently headed by C. E. Noble, the Provincial Analyst is a government service branch established in 1916 by order-in-council. It is located at the University of Alberta, Edmonton, under whose administration it falls. Before his appointment in 1953, Mr. Noble served for 18 years as assistant to J. A. Kelso, one of the first permanent analysts.

At its inception, the laboratory was devoted mainly to routine analyzing procedures assigned to it by provincial government departments, university and police forces. With the growth of other government, commercial and industrial laboratories, the Provincial Analyst continued to carry on a good portion of routine work combined with specialized analysis. As industry developed in Alberta during the 'twenties, its facilities were expanded to comprise a dual industrial laboratory. Today, the latter phase of activities has made it into a sort of "trouble shooting" centre. For instance, when an industrial plant comes up against a complex chemical problem with which its own lab is not equipped to deal, the Provincial Analyst and Industrial Laboratory is often called upon to help locate the trouble through its broad background and testing facilities.

Takes 25 Analyses

In the past year, Mr. Noble and his two aides analyzed a record 7,000 sample specimens. These ranged from unidentified steel sheets shipped to an oil refinery for storage tank construction, to internal organs of animals which died from peculiar causes. Hardly any two tests in a normal working day are the same, reports Mr. Noble.



Fortune of some prospector hangs in balance as Mr. Noble does metal analysis of mineral sample on laboratory's new Spectracord. Rock sample is dissolved and put into unit's flame pot. Meanwhile, Mr. Noble studies readings on previous chart. Spectracord does not give absolute quantities but closely sets forth component measurements. Estimates are that machine will run test at three to five dollars, whereas older methods involve costs up to $100.

The amount of work attached to one test can be tremendous, for it takes as high as 25 separate analyses to deal with one specimen. On a recent day, one of the lab's technicians was busy analyzing chips of bronze gears for an industrial plant. The company had spent about $150,000 on gear driven equipment but the machines wouldn't stand normal wear. The Provincial Analyst was called to conduct a test determining whether or not the bronze measured up to the supplier's specifications. The specimen was dissolved to the point where its eight component chemicals could be separated and an individual analysis done on each. With one employee doing the test, it took three days to complete. Quantities of the eight elements were measured against specifications up to one-tenth of one percent.

Measurements in some tests must be exact to the millionth part. Working in a clinical atmosphere, the three technicians at the lab employ an assortment of test tubes, vats, beakers, gas burners, micro-balancers and melting-point apparatus. The latest addition to their equipment is a $9,000 unit called a Spectracord. To a layman, this machine represents a sighted, feeling calculator. It will measure some elements up to .002 millionth part. Its maze of electronic tubes coupled with light-refraction devices cuts testing time of many samples to a fraction of normal. In one operation it will separate and measure the known chemical elements in a sample under test. Results are fully and automatically recorded on a graphic chart. Spectracord limitations appear only to the extent of methods and formulas which can be worked out by analysts.

Helps Police Work

The new machine lends itself particularly well to police investigations. Often to prove or disprove a point, similar substances such as dust, cloth, mud, and paint are tested to see if they are identical. If they are, the Spectracord will turn out identical lines—indisputable evidence.

In the pathological field, the Provincial Analyst is frequently called upon to conduct analysis for coroners or police. Tests determine the blood alcohol content in such cases as traffic fatalities or presence of toxic poison in cases of suicide or questionable deaths. A widely publicized incident involved the demise of several Indians in the Drayton Valley area early this summer. Laboratory analysis revealed the victims had consumed lethal doses of rubbing alcohol. Similar chemical analyses are also conducted for veterinary laboratories. In drug analysis the laboratory has

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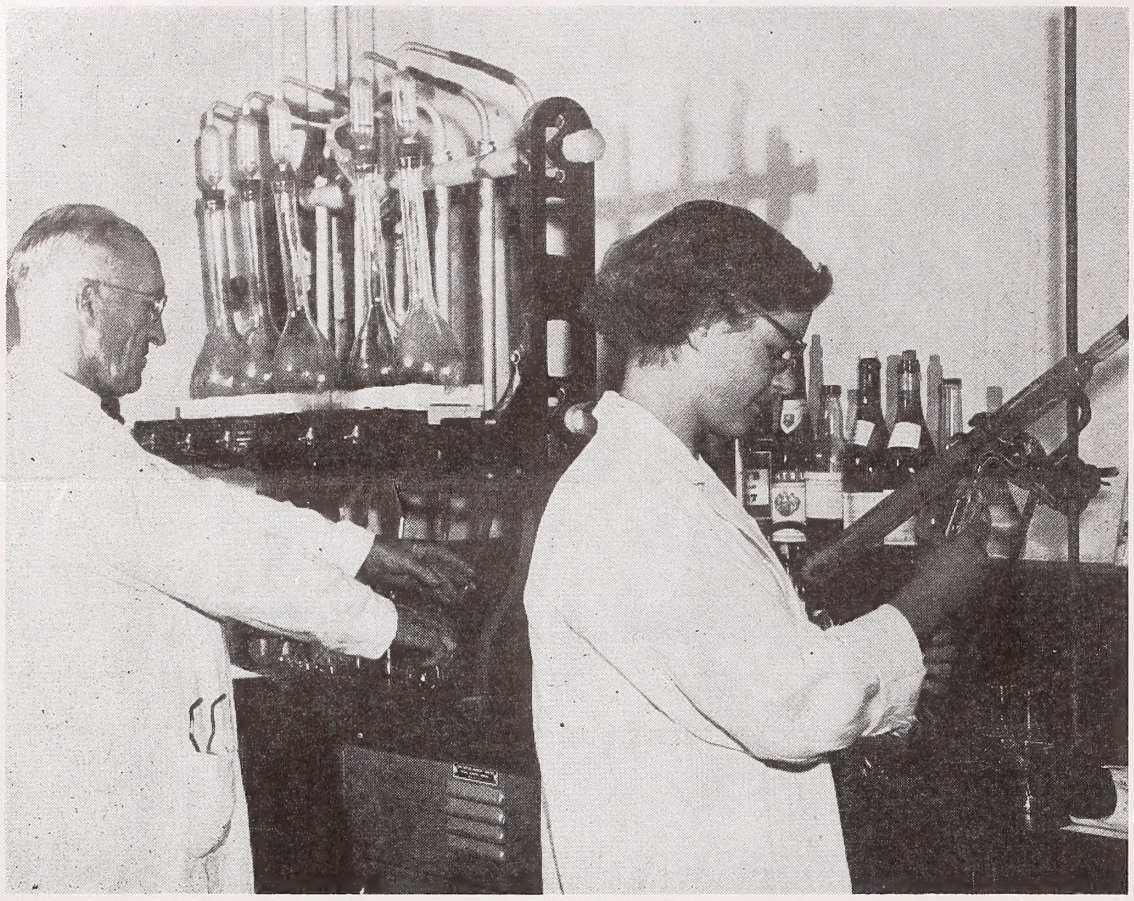

Surrounded by tools of their profession, Provincial Analyst C. E. Noble and aide, Mrs. E. Everaars, conduct blood analysis for detection of alcohol. Outcome of legal action arising from traffic fatality may hinge on their findings. Similar tests also determine presence of lethal drugs and prove of inestimable value in process of Law. Great volume of work relates to water analysis done with "titration" apparatus in another section of lab.

spread influence even to horse racing. When police suspect an animal has been "doped," they take a saliva sample for analysis. Quick tests will show whether or not a runner has been "stimulated" and to what extent.

Widely separated analyses relate to almost every aspect of our everyday lives. The lab analyzes countless raw materials and finished products which we take more or less for granted. It is quite probable that shingles on our roofs have been checked by the provincial Analyst for durability and their moisture content. Almost certainly the water we drink has been checked for presence of harmful nitrates and salts. Last year the lab ran tests on 2,600 water samples. This compares with only 350 in 1948. Although community water supplies are initially analyzed for chemical content, the Provincial Analyst is responsible for periodic checks to make sure the supply remains free from contamination. Mr. Noble estimates that about 90 per cent of all water testing deals with private sources on farms and hamlets.

Checks Ore Samples

Also in 1955, the laboratory ran assays on 577 ore samples. Prospectors operating all over western Canada sent specimens for analysis. Main metals found included gold, silver, uranium, copper, lead, zinc, nickel, lithium, thorium and platinum. Occasional assays turn up the rarer metals such as cobalt, beryl, boron and many others. Assays on industrial minerals set out quantitative presence of brick clay, sandstone, gypsum, limerocks and silicate sand. As a result of these assays, prospectors and promoters are in position to know if their deposits hold commercial quantity.

In the safety field, the Provincial Analyst tests finished concrete and the tensile strength of various new wire cables. Most of this latter work is done for mines, where carrying cables are the life thread of workers. Sections are put into a machine and stretched to breaking point. If the calibrated reading on the machine does not come somewhat above specified requirements, the cable falls into the rejected class.

Aluminum, steel, plastics, glass and concrete can be given different properties during manufacturing process. When a producing plant is unable to achieve the desired result or buyers complain about any manufactured products, the laboratory is available for chemical analysis. Linked as it is with the university, experts can supply an interpretive report on the basis of the lab's findings.

Brewers Benefit

Acting under direction of the Alberta Liquor Control Board, the laboratory is also responsible for conducting monthly checks in Alberta breweries. These determine the quality and alcoholic content of the plants' products. Co-operation of breweries has been excellent, with the result that Alberta recently won international recognition at Brussels, Belgium, for "the finest made beer in the world."

Not all the work carried on by the Provincial Analyst and Industrial Laboratory falls into a category of broad significance. Occasionally the tedium of exactness is mellowed by unusual requests. A recent case in point is that of a husband who sent in a piece of cloth from his coat to have a pinkish substance on the surface analyzed. Apparently, matrimonial trouble had developed when the wife, taking the pinkish substance for cosmetic powder, accused the husband of "stepping out." Hubby firmly maintained that the adhesion was paint which had gotten onto his coat while he helped push a stalled car. Laboratory analysis settled the dispute—the lady was wrong! ●

Report Survey Of Wage Levels

Average weekly wages and salaries of Alberta employees show increases over a one-year period ended June 1st. Decreases were marked in only two wage earner classifications by the Alberta Bureau of Statistics.

Oil miners rank as the highest paid personnel in the province with an annual weekly wage of $89.04, an increase of $8 over last year. Workers manufacturing petroleum products receive an average weekly wage of $87.46, down $1.05 from last year.

Other bread earners employed in manufacturing industries receive average remuneration ranging from $51 weekly to $71 weekly. Transportation equipment manufacturing employees are, on average, earning 21 cents less weekly this year.

Biggest pay boost was recorded in the building construction trade. Employees now receive $80.11 weekly as compared to $66.70 the previous year. Service personnel in hotels and restaurants earn $39.74 weekly, an increase of 53 cents. Railway employees' wages have risen from $65.10 to $67.07.

Comparison figures for Calgary and Edmonton show that the Capital city employees are paid on a higher rate than their southern counterparts in the construction and wholesale trade industries. Differences in wages range from just a few cents to five dollars weekly, but in the industrial composite, Calgary employees receive 40 cents more weekly. ●

Continuing Readers Return Coupons

Miss Doris Bryenton, of the Publications Branch of the Department of Economic Affairs, is pictured opening some of the thousands of envelopes containing coupons from our readers asking their names be kept on the mailing list for "Within Our Borders." For the past three weeks, coupons have been carried in regular issues of this publication. Returned to this office, they ensure continued receipt of Within Our Borders.

Thousands of Photos

AERIAL SNAPSHOTS HELP DEVELOPMENT PLANS

AN UNLIMITED amount of information on the contours and natural resources of Alberta has been made available through an aerial photographic survey conducted by the Department of Lands and Forests. It is now possible to chart exactly the rise and fall of land, the exact location of lakes and rivers, and approximately the extent of vast timber reserves. Forest surveys and geographical locations are only a part of the wealth of information contained in prints made from aerial photographs.

Aerial photography gained its greatest recognition during the Second World War. Used in reconnaissance work, it was possible to evaluate enemy locations and strength with pinpoint accuracy. Adapted to survey work it has proven to be just as reliable and accurate.

The ground survey of Alberta's quarter million square miles started in 1882. As areas became more settled, land surveyors forced back the frontiers by marking the outlines of more sections and townships that could be cleared and broken. Survey parties pushing into vast areas of wilderness charted approximately half of the province. In other areas that may never be settled, particularly in the north, survey lines paved the way for aerial surveys.

First Aerial Survey

An aerial survey, which was started in 1949 and completed in 1953, provided the first complete province-wide forest inventory. Planes equipped with special survey cameras photographed every square mile of the province in this mammoth project. Flying at altitudes of up to 20,000 feet above ground level, they produced photographs that covered areas averaging 32 square miles. Prints from these films were placed on file in the Department of Lands and Forests photographic library, which now contains over 350,000 photographs.

A staff of three in the Technical Division's photographic laboratory have been working at full capacity to keep up with the demand for aerial photographs. Films valued at $1,000,000 are stored in their files. Last year the photobranch prepared over 100,000 prints from these films.

Specialized Skill

Although planimetric maps and aerial photographs are sold in great numbers, an additional demand is placed on the photo lab by their own department which uses prints in the compilation of base, topographical and forest cover maps. Charting the contours of the earth from a photograph is an exacting art which requires the combination of a trained technician and precision instruments. Reading aerial photographs is also a specialized art. A dozen or more technicians in fields as varied as archaeology and forestry could take one photograph and each could glean an endless amount of information from it.

Commercial firms making use of maps and photographs are numerous but the oil industry is by far the largest customer. Oil companies find the aerial photos particularly valuable in examining the contours of the earth's surface. From this they are able to evaluate possible locations

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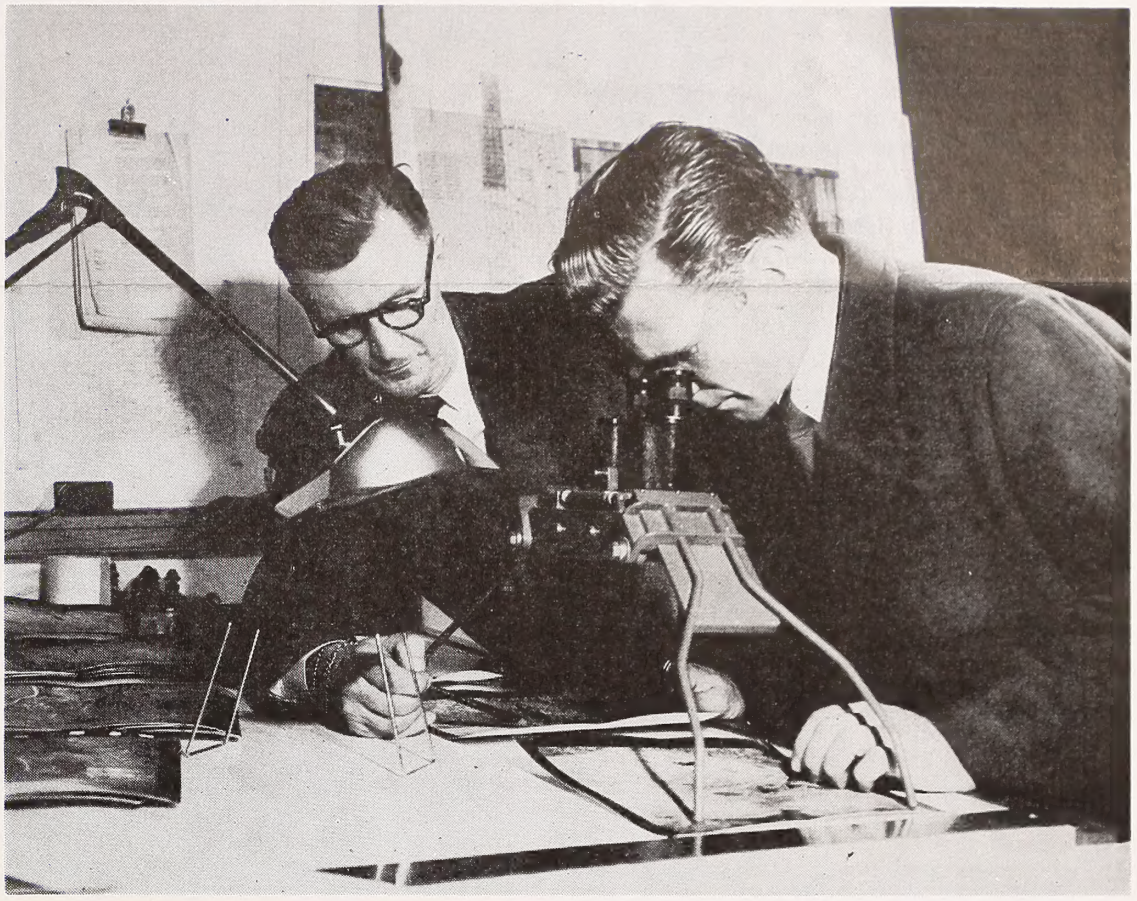
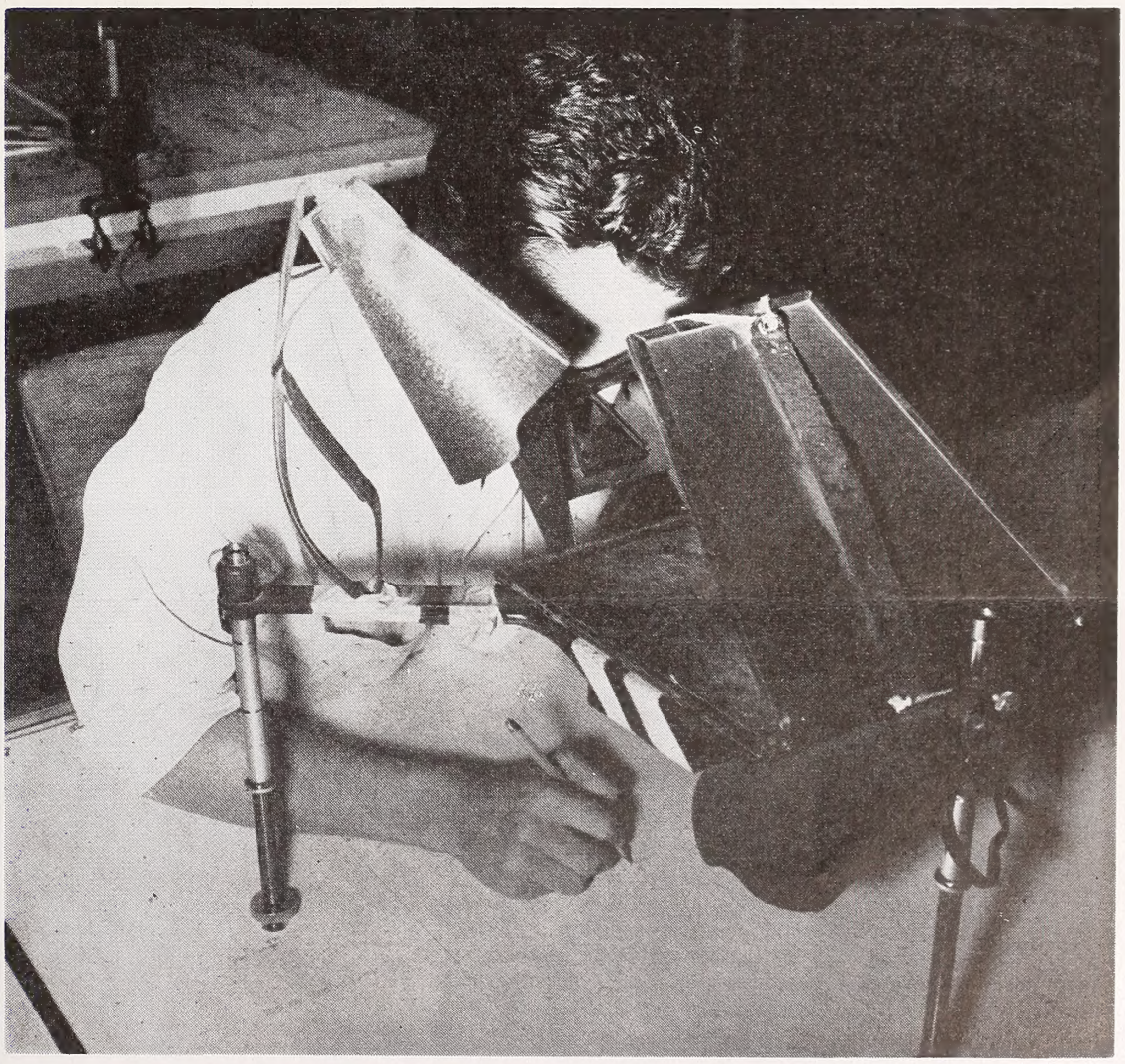


Minute details of an aerial survey print are clearly shown through this magnifier. Staff members of the Technical Division of the Alberta Department of Lands and Forests check a new survey print.



A draftsman of the Technical Division of the Department of Lands and Forests prepares a large scale map of the Province from an aerial photograph.

of oil deposits through studying the surface formation and calculating its geological structure.

An intensive scrutiny of Alberta's timber reserves was made possible by a special aerial survey of the province's 150,000 square miles of forests. By combining ground sampling with aerial photography, the forestry division is able to estimate such important items as volume of productive timber, extent of burnt areas, and tree reproduction rates. Placing these photographs under a stereoscope, they are also able to tell the various types of trees and derive their approximate numbers.

For Flood Control

Control measures can be planned to prevent flooding of rivers by using information contained in aerial photographs. By examining the course of rivers, the most strategic points for location of damsites and diversions can be ascertained. Also in the case of irrigation, the area that will be inundated through installation of dams can be accurately computed.

It is estimated that the time and expenditure saved in the use of aerial surveys for planning is at least five to one. Town planners can use photographs to choose areas for subdivision that are easiest to service and then select the areas that are best suited for industrial, business or residential purposes. Some towns that have availed themselves of this service are Bonnyville, Camrose and Pincher Creek. In the case of towns, one or more photographs are combined into what is known as a mosaic. The mosaic then presents a panoramic view of the town and its surroundings.

Sub-surface mining would appear to be one type of enterprise that could not make use of aerial photographs. However, as the contours of the earth can indicate the presence of minerals below the surface, this industry can also benefit from the seemingly unlimited variety of information that is provided by aerial surveys. ●

Coming Events

Oct. 15-19	*Sheep Sale and Show* ..... *Calgary*
Oct. 16-18	*Alberta Hospitals Association Convention* ..... *Edmonton*
Oct. 16-18	*Union of Alta. Municipalities* ..... *Lethbridge*
Oct. 18	*Alta. Div. Canadian Petroleum Association* ..... *Calgary*
Oct. 18	*Alta. Div. Can. Petroleum Assoc.* ..... *Calgary*
Oct. 19-21	*Luther League Convention* ..... *Czar*
Oct. 19-21	*Luther League Convention* ..... *Czar*
Oct. 20-23	*Alberta Association Municipal Districts Convention* ..... *Edmonton*
Oct. 22-27	*Annual Sheep and Swine Show, Edmonton*
Oct. 22-26	*Sheep Sale and Show* ..... *Edmonton*
Oct. 25-26	*Union of Alberta Municipalities Lethbridge*
Oct. 25-26	*Union of Alta. Municipalities* ..... *Lethbridge*
Oct. 29-31	*Canadian Famous Players Assoc., Edmonton*
Oct. 29 Nov. 1	*Canadian Technical Asphalt Association Convention* ..... *Edmonton*
Nov. 2- 3	*Civil Service Association of Alberta Convention* ..... *Edmonton*
Nov. 5- 6	*Insurance Agents Association of Alberta Convention* ..... *Calgary*
Nov. 6- 7	*Motor Courts and Resorts Association Convention* ..... *Calgary*
Nov. 6- 8	*Alberta School Trustees Convention* ..... *Edmonton*
Nov. 26-28	*Social Credit League of Alberta Convention* ..... *Edmonton*

Broadcasts Assisting School Teachers

Alberta Public School students are being given the opportunity of learning the importance of industry to the province through the "Alberta Album" feature of the 1956 - 57 Alberta School Broadcasts series.

Presented over eight provincial radio stations, the school broadcasts of the Department of Education provide an opportunity to augment classroom instruction by offering current information not available from standard texts. The broadcasts are intended to supplement rather that to substitute for other teaching aids.

Two radio stations, CKUA, Edmonton, and CHAT, Medicine Hat, will feature programs twice daily. Other participating stations, CFCN, Calgary; GFGP, Grande Prairie; CFCW, Camrose; CJOC, Lethbridge; CKYL, Peace River; and CBX, Alberta, will present programs either in the mornings or afternoons, Monday through Friday. Private stations carry the broadcasts as a public service feature.

Operations of five Alberta industries are being presented on "Alberta Album" each Wednesday in October, starting Oct. 3. Included are a pulp plant, flour mill, cement plant, salt refinery and a cannery. Listening students will be aided in following the broadcasts by a pamphlet of pictures from the Department of Education, illustrating the various processes of industry.

Teachers will have available to them school broadcasts every school day, for a 25-week period. For 20 of these weeks, there will be two broadcasts daily. Subject matter, in addition to "Alberta Album," includes singing and rhythmics, music, speech training, language and literature, enterprise, social studies, current events, health, vocational guidance and nature study.

School radio broadcasts are prepared under the supervision of Departments of Education across Canada. ●

20 Carloads of Stock Heading for Royal Fair

Hope of Alberta livestock breeders for national laurels at the forthcoming Toronto Royal Winter Fair is pinned on 20 carloads of stock slated to make the trip east at the end of October. The record shipment will comprise two cars of horses, 13 of beef cattle, two of dairy cattle, two of sheep and one of swine—one more carload than was exhibited at the 1955 Royal.

Alberta's "cream of the crop" exhibit is made up of selections chosen by agriculture officials and fieldmen in co-operation with the various breed associations. The list of exhibitors includes 13 beef breeders, 17 in fatstock class, eight in dairy, two dual purpose, 11 heavy draft horse, three light horse, six swine and eleven sheep. Contributors are listed from throughout Alberta except for the Peace River area.

Shipment will be made via C.N.R., leaving Calgary and Edmonton assembly points on October 30. As in the past, the Alberta Department of Agriculture will pay expenses connected with freight, feed and bedding material. In turn, the federal agriculture department will reimburse the province a major portion of the freight bill. ●

Figures Show Alberta's Progress

The Town of Stettler led other Alberta communities in borrowing from the Municipal Capital Expenditure Loans Fund during the month of September, with its loan of $133,500. The moneys will provide for a street and sidewalk building program. Six communities borrowed a total of $293,600 from the fund during the month.

Loans granted included $78,000 to Fairview for its water system; $9,000 to Evansburg, for its sewer system; $23,500 to Calmar for its sewer and water program; $34,000 to Fort Saskatchewan, for the purchase of land; and $10,600 to High Prairie, for the sewer and water installation program.

Total amount borrowed from the Fund during the period April 1 to September 30 came to $23,846,505.

During the month of September, 39 Alberta rural electrification associations borrowed a total of $353,697.22 from the Rural Electrification Revolving Fund. The total amount loaned out by the fund, up to September 30, came to $13,931,895.00.

The total number of companies incorporated in Alberta during the month of August, last month for which complete records are available, come to 104 and total authorized capital was $9,353,800.

Retail trade in Alberta for the period from January to July this year came to $607,-891,000, a jump of 10.5 percent over the amount for the same period the year previous. Wholesale trade for the period from January to August this year came to $493,994,636, a jump of 16.5 over the same period last year.

July figures for bank debits this year were $1,093,526,000 which showed a jump of 32 percent over the total of $828,129,000 for the same month last year. The jump for the period from January to July this year was 25.2 percent.

About 3,000 more new motor vehicles were sold in the province for the same seven-month period this year than last, with 25,895 in 1956 and 22,734 for last year.

One of the few points in the Alberta economy picture that showed decline was in the building field. In the period from January to August this year, there were in the eight major cities, 9,875 building permits to a value of $104,380,959 issued. This in contrast to 9,938 permits valued at $114,757,204 issued for the same period last year.

One of the best barometers of tourism showed favorable returns, with figures of tourists entering the national parks in the province indicating a 7.1 percent jump for the first nine months of this year over last year for the same period. ●

WITHIN OUR BORDERS

"Within Our Borders" is a publication designed to acquaint the people of the Province with the administration and services of the Alberta Government.

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